

WHAT IS CLAIMED IS:

1           1. A sealing system for a rotating machine having a  
2 stationary element and a drive element rotationally  
3 connected to said stationary element, the sealing system  
4 comprising:

5           a plate comprising a bearing surface, the plate  
6 being connected to one of said drive element and said  
7 stationary element; and

8           a sealing assembly comprising a resilient bellows  
9 and a bearing surface, the bellows providing a force  
10 which causes the bearing surface of the sealing assembly  
11 to bear on the bearing surface of the plate to form a  
12 dynamic seal.

1           2. The sealing system of claim 1, wherein the  
2 sealing assembly further comprises a thrust plate  
3 attached to the resilient bellows, and wherein the thrust  
4 plate provides said bearing surface of the sealing  
5 assembly.

1           3. The sealing system of claim 2, wherein the  
2 resilient bellows comprises a collar to which the thrust  
3 plate is attached.

1           4. The sealing system of claim 3, wherein the  
2 sealing assembly further comprises a static sealing  
3 element, the static sealing element being disposed within

4 a gap provided between the collar and the thrust plate.

1 5. The sealing system of claim 1, further  
2 comprising a mounting element which connects said plate  
3 to said one of said drive and stationary elements.

1 6. The sealing system of claim 1, wherein the  
2 resilient bellows comprises at least one corrugation.

1 7. The sealing system of claim 1, wherein at least  
2 one of said plate and said thrust plate comprises  
3 graphite which provides a sealing and lubricating layer  
4 to the dynamic seal.

1 8. The sealing system of claim 1, further including  
2 a driven element operatively associated with said drive  
3 element.

1 9. The sealing system of claim 8, wherein the  
2 driven element comprises an impeller.

1 10. The sealing system of claim 8, wherein the  
2 driven element comprises a propeller.

1 11. The sealing system of claim 8, wherein the  
2 driven element comprises a mixing bar.

1 12. The sealing system of claim 1, further

2 comprising a seal chamber which at least partially  
3 encloses said sealing assembly.

1 13. The sealing system of claim 12, wherein the  
2 seal chamber is defined by the stationary element.

1 14. The sealing system of claim 12, further  
2 comprising a seal gland which closes an area of the seal  
3 chamber.

1 15. A sealing system for a rotating machine having  
2 a stationary element and a drive element rotationally  
3 connected to said stationary element, the sealing system  
4 comprising:

5 a drive plate comprising a bearing surface, the  
6 first plate being rigidly connected to said drive  
7 element;

8 a stationary plate comprising a bearing surface, the  
9 second plate being rigidly connected to said stationary  
10 element; and

11 a sealing assembly comprising a resilient bellows, a  
12 first bearing surface and a second bearing surface, the  
13 bellows providing a force which causes the first bearing  
14 surface of the sealing assembly to bear on the bearing  
15 surface of the drive plate forming a first dynamic seal  
16 and causes the second bearing surface of the sealing  
17 assembly to bear on the bearing surface of the stationary  
18 plate forming a second dynamic seal.

16. A sealing system for a rotating machine having a stationary element and a drive element rotationally connected to said stationary element, the sealing system comprising:

a drive plate comprising graphite and a bearing surface, the drive plate being rigidly connected to said drive element

a stationary plate comprising graphite and a bearing surface, the stationary plate being rigidly connected to said stationary element;

a sealing assembly comprising a resilient corrugated bellows providing a force and having first and second collars, a first thrust plate attached to the first collar and providing a first bearing surface, and a second thrust plate attached to the second collar and providing a second bearing surface;

a first static sealing element, the first static sealing element being disposed within a first gap provided between the first collar and the first thrust plate;

a second static sealing element, the second static sealing element being disposed within a second gap provided between the second collar and the second thrust plate;

a drive plate mounting element which connects the drive plate to the drive element; and

a stationary plate mounting element which connects

28 the stationary plate to the stationary element;  
29 wherein the first and second thrust plates further  
30 comprise graphite, and wherein the force of the bellows  
31 causes the first bearing surface of the sealing assembly  
32 to bear on the bearing surface of the drive plate forming  
33 a first dynamic seal comprising a first sealing and  
34 lubricating graphite layer, and the force of the bellows  
35 causes the second bearing surface of the sealing assembly  
36 to bear on the bearing surface of the stationary plate  
37 forming a second dynamic seal comprising a second sealing  
38 and lubricating graphite layer.